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Book review: Galileo Galilei, The Essential Galileo, edited by Maurice A. Finocchiaro (Indianapolis: Hackett Publishing Company, 2008)

Citation for published version:

Henry, J 2009, 'Book review: Galileo Galilei, The Essential Galileo, edited by Maurice A. Finocchiaro (Indianapolis: Hackett Publishing Company, 2008)' *Isis*, vol 100, no. 4, pp. 908-909., 10.1086/652057

Digital Object Identifier (DOI):

[10.1086/652057](https://doi.org/10.1086/652057)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher final version (usually the publisher pdf)

Published In:

Isis

Publisher Rights Statement:

© Henry, J. (2009). Book review: Galileo Galilei, The Essential Galileo, edited by Maurice A. Finocchiaro (Indianapolis: Hackett Publishing Company, 2008). *Isis*, 100(4), 908-909doi: 10.1086/652057

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CHICAGO JOURNALS



History
of
Science
Society

The Essential Galileo

The Essential Galileo by Galileo Galilei

Review by: By John Henry

Isis, Vol. 100, No. 4 (December 2009), pp. 908-909

Published by: [The University of Chicago Press](#) on behalf of [The History of Science Society](#)

Stable URL: <http://www.jstor.org/stable/10.1086/652057>

Accessed: 14/01/2014 10:50

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claims of America's "patriot philosophers" to a moral leadership hitherto dominated by Britain. In two concluding essays, Susan Scott Parrish and François Regourd discuss Europe's fear of and fascination with indigenous knowledge. In the British colonial Carolinas and the French colony of Saint Dominique (Haiti), the European response to local expertise in poisons and healing plants produced a disorienting combination of distrust and respect. Even so, as Regourd shows, while the metropole could propose, the local could dispose. The implications were global. It was in Haiti, we are reminded, that we find the first royal academy of science in the French colonial empire.

The editors, whose "Introduction" affords a superb résumé of the field, close the volume with an "Afterword" by Margaret Jacob, who has for many years illuminated the historical relations of science and power. In "Science, Global Capitalism, and the State" she points to the central motives and features of science, exploration, and enterprise in the early modern Atlantic world.

This book will be a useful addition to the libraries of all those who study "science and empire." But while these essays say much, more remains to be said. For instance, while they illuminate the early colonial enterprise, they could well have pointed to the implications of their stories for later periods. There will always be editorial questions of scope and scale, but if the Danes (in Greenland) may be excused play, the Dutch surely deserve more mention than they receive. Second, whilst the authors rightly focus on imperial botany, in both agriculture and medicine, almost inevitable comparisons with the parallel domains of mining and metallurgy are strangely absent. Finally, it is curious to speak of globalism without summoning Europe's contemporary experience of Asia and the Pacific; neither can be understood without the other. Using a similar compass, it would be interesting to consider the far-reaching implications of the principles of "secrecy" that long engrossed—and inhibited—Iberian and French cartography. By neglecting contrasts between the Iberian experience and the eventual "open chart" policy of the Admiralty, the authors miss a chance to show how and why secrecy succumbed to science, only to reemerge as the enemy of internationalism in years to come.

Finally, a thought for the future. The editors amply demonstrate that while science may be international, nations have science, and that in this sense intellectual rivalry mimics commercial trade. Overall, however, the essays give us more about science than economics. The em-

phasis on commerce—a welcome approach, dear to Braudel's heart—is not as well documented as it might be—which is perhaps to suggest that economic historians be invited to the next editorial party. As the present global downturn reminds us—whether scientists or economists—we are all in it together.

ROY MACLEOD

Galileo Galilei. *The Essential Galileo*. Edited and translated by **Maurice A. Finocchiaro**. lx + 380 pp., illus., index. Indianapolis/Cambridge: Hackett Publishing, 2008. \$12.95 (paper).

Maurice Finocchiaro is an old hand at compiling collections of primary source materials by and about Galileo. He has previously published two "documentary histories" of Galileo: *The Galileo Affair* (California, 1989), which presents all the major documents by Galileo and others that are relevant to Galileo's clash with his church; and *Retrying Galileo, 1633–1992* (California, 2005), which presents many of the accounts and judgments about Galileo and his condemnation up to the supposed rehabilitation by Pope John Paul II in 1992. Those who know these two books will hardly need to see *The Essential Galileo* to be convinced that the publishers have chosen the best possible editor and that this selection is the best introductory guide to Galileo's achievements.

The collection begins with a new translation of the *Sidereal Messenger* (in its entirety), extracts from the *Discourse on Bodies in Water*, and the letters on sunspots, before turning to documents related to the confrontation with the Church. Galileo's letter to Castelli and the "Letter to the Grand Duchess Christina" are included, of course, as is Cardinal Bellarmine's letter to Paolo Antonio Foscarini and Galileo's "Considerations on the Copernican Opinion," which included a response to Bellarmine. There follows a series of documents related to the Inquisition proceedings of 1615–1616 (including the text of the so-called Special Injunction and Bellarmine's certificate stating that Galileo had not been ordered to make any abjuration). This brings us back to extracts from the *Assayer* and from the *Dialogue* (eight substantial sections), before moving to a series of documents pertaining to the trial of 1632–1633. The final chapter provides eight extracts on different topics from the *Two New Sciences*. All this is prefaced by an introduction on "Galileo's Legacy, Life, and Works"; a detailed chronology of his life, including salient aspects of his posthumous

career (again, up to 1992); a glossary of terms and names; and a bibliography.

The book could very readily be used as the primary teaching text for a course on Galileo, although it is a pity that there is very little room here for expert guidance by the editor (in contrast to his two earlier documentary histories). Apart from the general introduction at the beginning of the volume (which, at less than sixteen pages, is rather short), there are no introductions to the individual works. Although there is the odd helpful comment in a footnote here and there (at a crucial point in Bellarmine's certificate, for example, the reader is urged to compare this with the Decree of the Index and the Special Injunction because "many of the issues in the affair hinge on this" [p. 178]), for the most part the texts are left to speak for themselves. The selection of the scientific works is excellent, including all the famous aspects of Galileo's scientific achievements and putting all the famous quotations in context. It is open to the charge of being whiggish, of course, but that could be defended on the grounds that what is essential in Galileo's scientific work is what played a role in the subsequent development of physics. Besides, there is another defense that forestalls all criticism. Finocchiaro tells us in the preface that his guiding principle "has been that the resulting volume should be relatively small and inexpensive, in accordance with a time-tested formula provided by the publisher" (p. vii). Given this restraint, it is hard to fault the editor's choices.

I would have liked to see some of the atomistic passages from the *Two New Sciences* to accompany the famous passage from the *Assayer* (which is included), even though Galileo's atomism of mathematically indivisible atoms was unworkable in physics and was a dead end (although arguably it was influential in the mathematics of indivisibles of Cavalieri). But if that meant leaving out something that did not prove to be a dead end, then clearly I could not defend this preference. Surely, however, Galileo's recently discovered involvement with the Inquisition in Venice in 1604 (over his alleged astrological determinism) might have been mentioned in the chronology, alongside the brief discussion of his investigations that year on falling bodies. Readers familiar with the works of Galileo could make endless suggestions as to what they might have liked to see included, but I cannot imagine any such reader seriously dissenting from the extremely well-judged choices of Maurice Finocchiaro.

JOHN HENRY

Dario Generali; Marc J. Ratcliff (Editors). *From Makers to Users: Microscopes, Markets, and Scientific Practices in the Seventeenth and Eighteenth Centuries/Dagli artigiani ai naturalisti: Microscopi, offerta dei mercati e pratiche scientifiche nei secoli XXVII e XVIII*. (Edizione Nazionale delle Opere di Antonio Vallisneri, 3.) xv + 336 pp., illus., figs., tables, index. Florence: Leo S. Olschki, 2007. €35 (cloth).

From Makers to Users originated from a workshop on early modern microscopy, held in Milan in 2004 and sponsored by the edition of the works of Antonio Vallisneri (1661–1730). The edition is deeply involved in studies on early eighteenth-century Italian scientific culture, as Vallisneri's correspondence and works can be used to explore a world still largely unknown. This book, however, is not limited to Vallisneri or even to eighteenth-century Italy: its essays range from microscope making in Jesuit Rome and in Christiaan Huygens's Holland to the uses of the microscope by Benjamin Martin and by Lazzaro Spallanzani's followers in northern Italy. All abstracts and most of the essays are in English, which makes the book largely accessible to international scholarship.

From Makers to Users focuses on the "interaction between makers and users" (p. 135) and aims at identifying "the networks, the various uses of, and the markets for microscopes" (p. vi). The emphasis on the relevance of local makers and networks throughout Europe, as opposed to a scholarship traditionally concerned with the London makers and trade, is probably one of the most innovative contributions of the book. The fame of English makers was often ensured more by their successful marketing and advertising strategies than by overwhelmingly superior technical quality. Naturalistic research in continental Europe relied mostly on local makers and short-range trade, rather than on the importation of foreign products. Inge Keil and Alberto Lualdi explore the world of scientific instrument making in early modern Augsburg and eighteenth-century Milan and Venice, offering a much-needed perspective on manufactures that still held an important share of local markets, while Francesco Andrietti analyzes the optical design and properties of their products.

As Marc Ratcliff points out, even "unofficial production," which included "religious makers" and scholars who made their own instruments, played a significant role in "converting microscopes into scientific instruments, especially on the Continent" (p. viii). In many cases, maker and user were the same person—or they worked in close relationship